A New Concept

Technology changes rapidly as a reflection of scientific research and industrial and business development.

Education for today and tomorrow, to be effective, needs to be based on current concepts and applications.

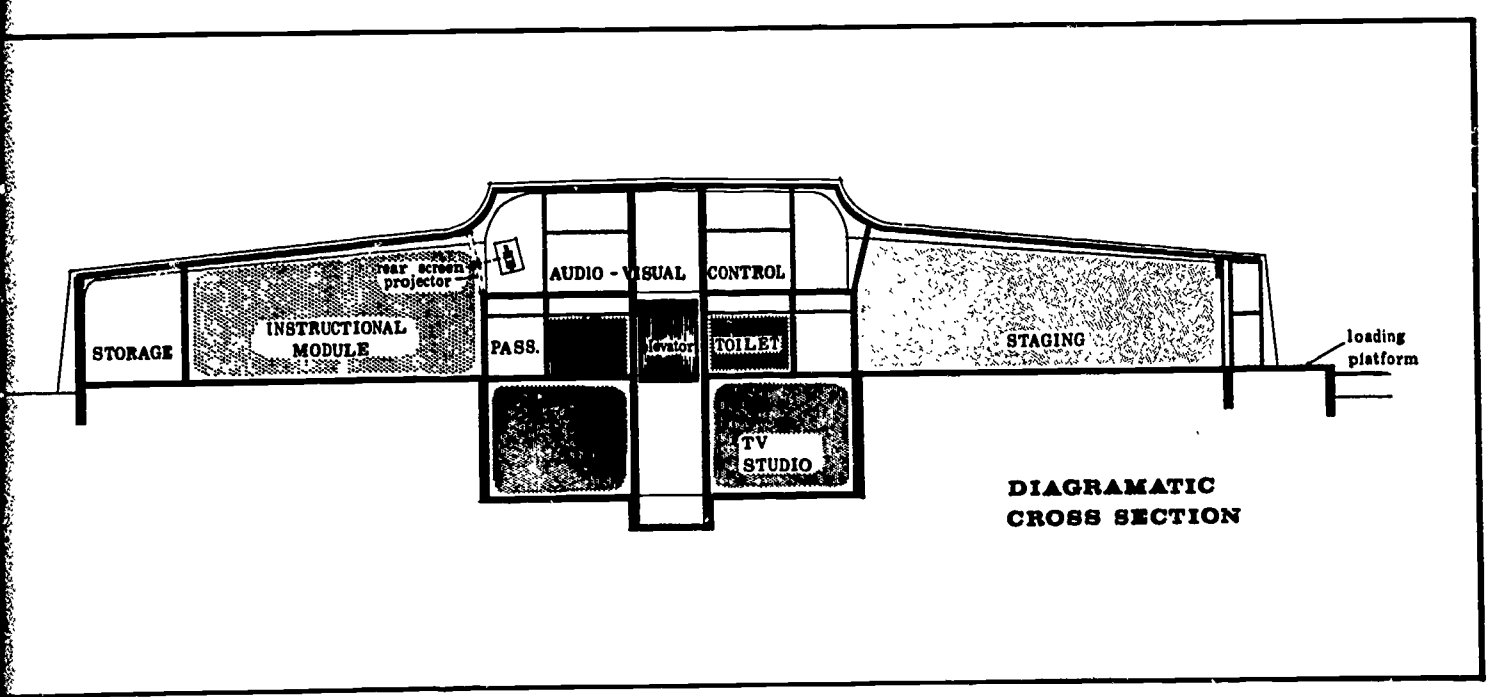
Updating of the principles of science to new applications of production and service for industry, business, and agriculture is also a major concern of education.

Vocational-technical educators, and especially teachers, require current information and familiarity with new "hardware" innovations to be effective.

The need of overcoming obsolescence is one of the greatest challenges facing vocational-technical educators today.

A new concept in teacher education and in-service growth is recognized as a supplement to existing programs, activities, and facilities.

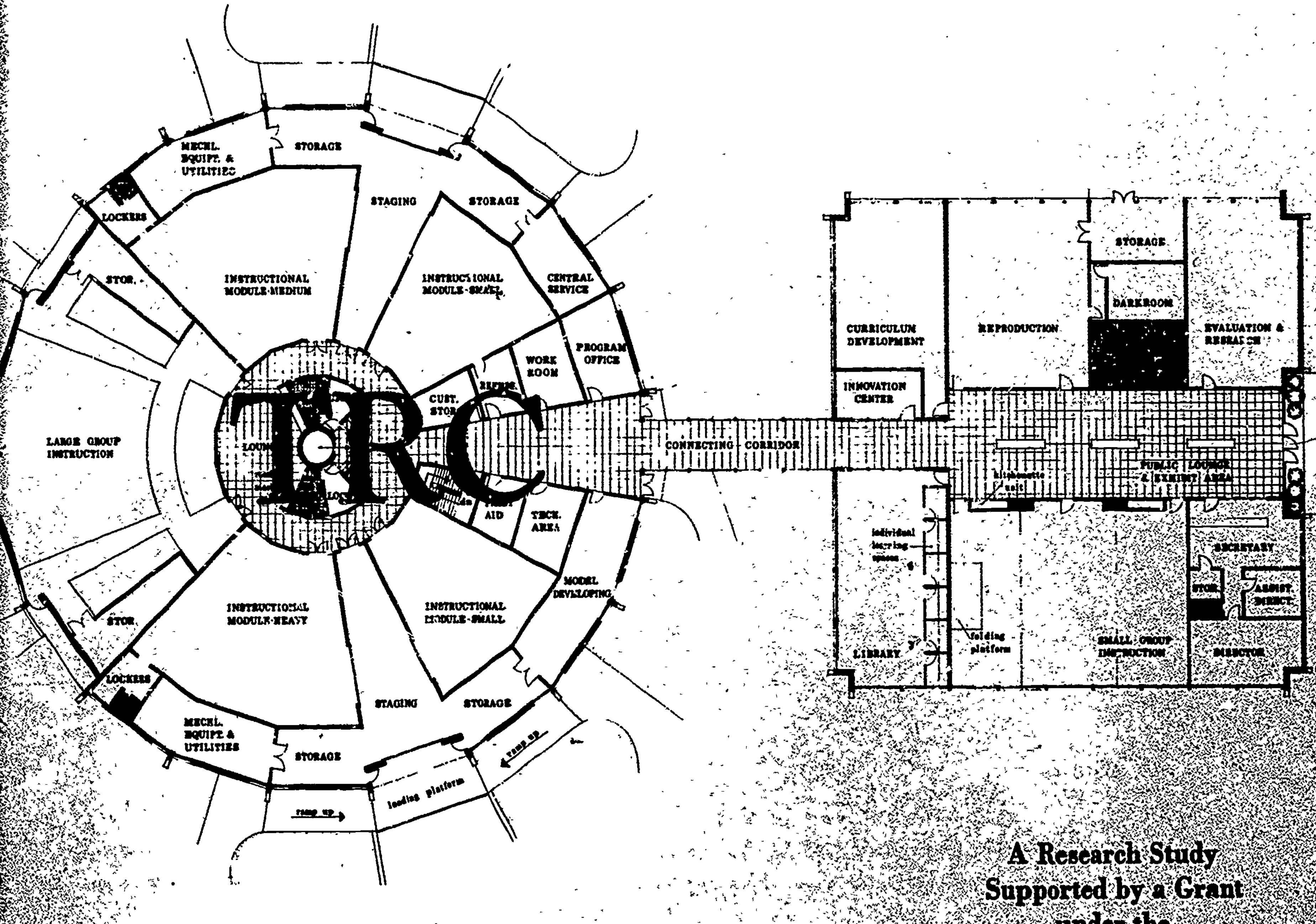
Satisfactory implementation of this new concept mandates a unique facility for these updating and enriching activities — A Technology-Resource Center for Vocational-Technical Education.



Diagramatic Cross Section

Technology-Resource Center

for Vocational-Technical Education



A Research Study
Supported by a Grant
under the
Vocational Education Act
of 1963 Section (4)c

A Research Activity of

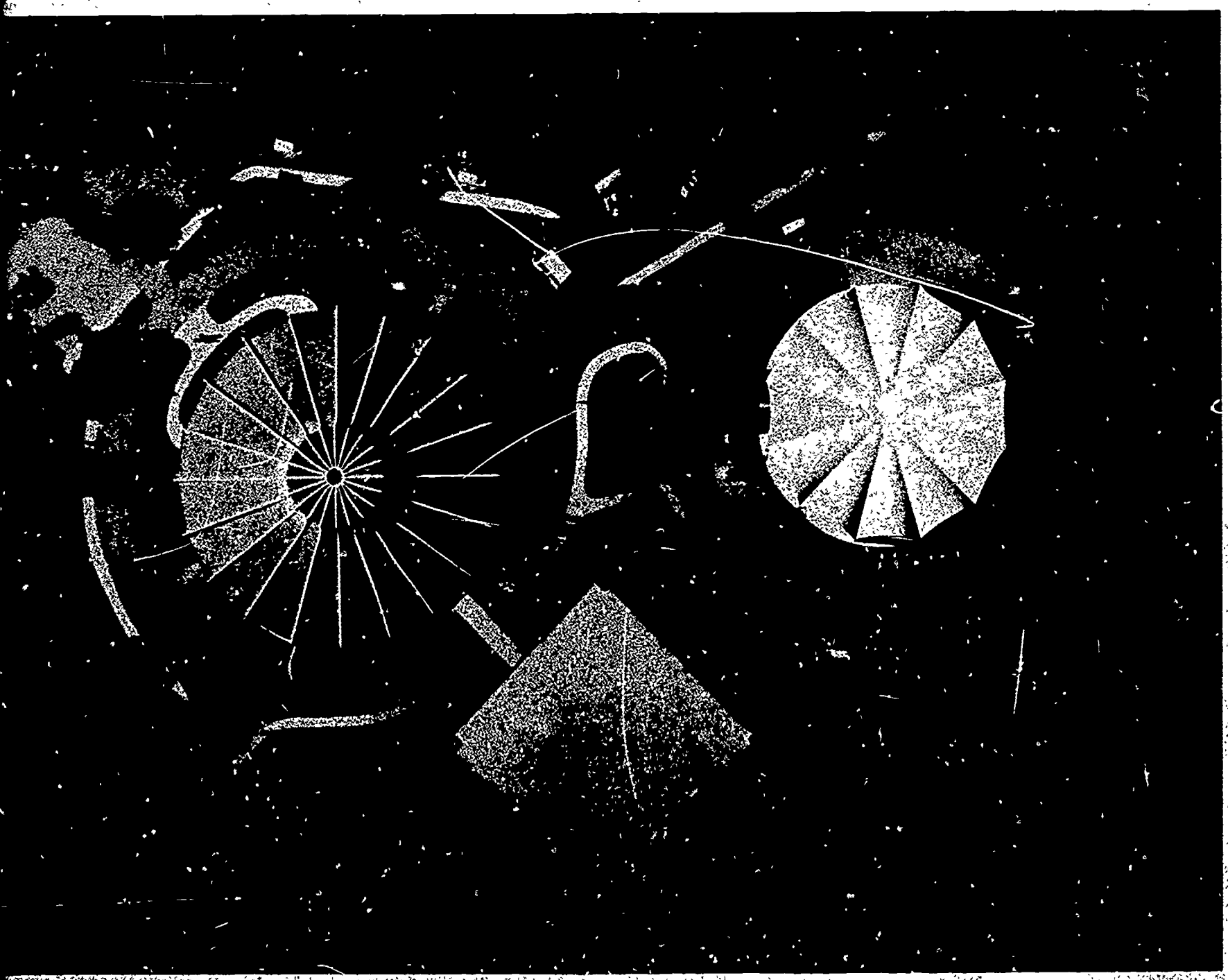
1766

RUTGERS - THE STATE UNIVERSITY
New Brunswick, New Jersey

The information contained in this brochure is the result of the research findings of the project: A VOCATIONAL-TECHNICAL TEACHER TECHNOLOGY CENTER — THE DEVELOPMENT OF A MODEL. This project was supported by a grant under Section 4(c) of the Vocational Education Act of 1963.

The purpose of this grant was to plan a model facility for updating vocational-technical teachers. The planning includes the development of the educational specifications, preliminary architectural plans, and outline of engineering specifications.

It is hoped that this model may serve as a pattern for other institutions of higher education or State departments of education in the development of TECHNOLOGY-RESOURCE CENTERS FOR EDUCATION on an area basis throughout the United States.

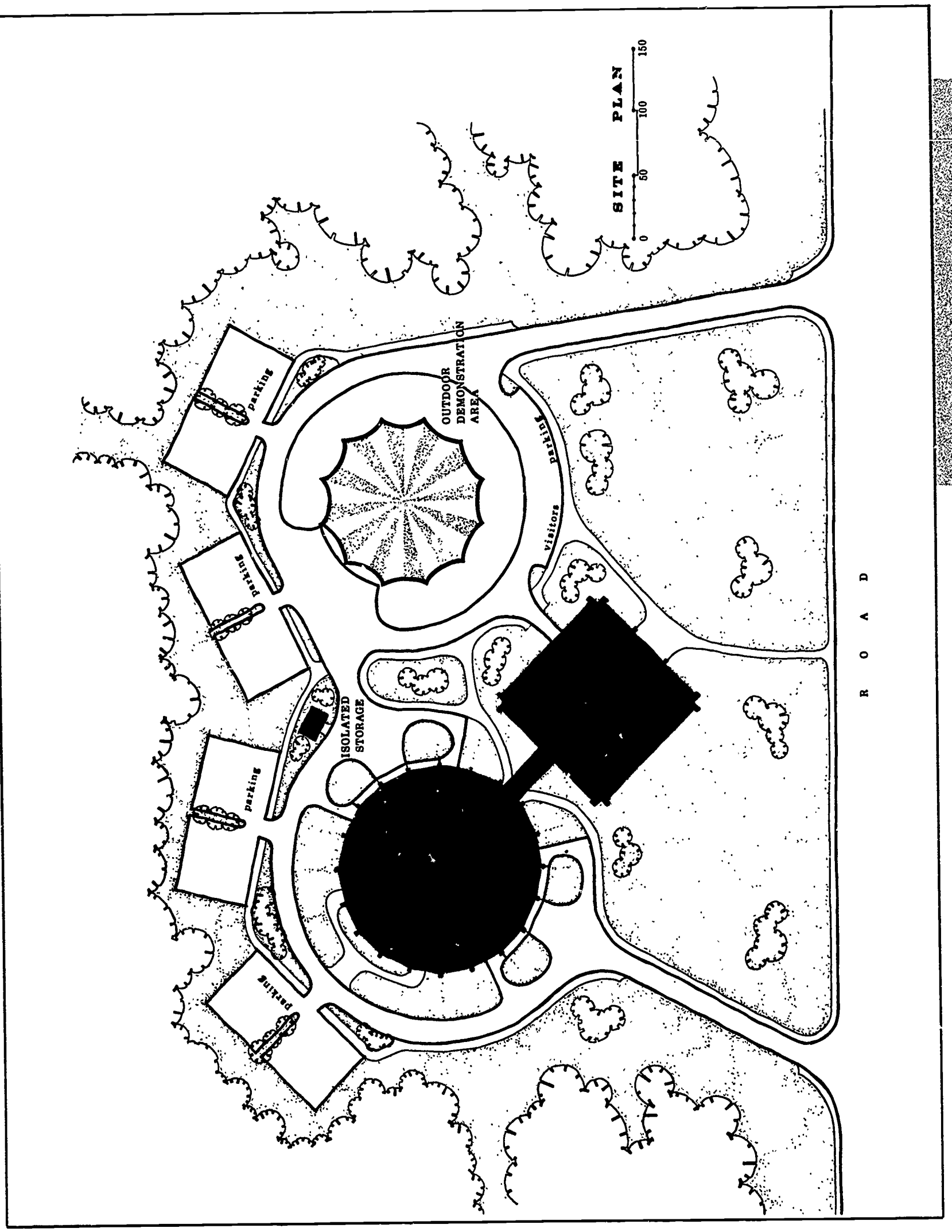


Aerial View of Technology Research Center for Vocational-Technical Education

Technology-Resource Center

for Vocational-Technical Education

A new innovation in facilities planning to expedite updating of in-service personnel of vocational-technical schools; enriching both undergraduate and graduate teacher education programs; and, also providing research, development, and evaluation of new instructional media such as curricula, materials, models, and devices.


SITE PLAN
0
50
100
150
OUTDOOR DEMONSTRATION AREA
visitors parking
parking
parking
parking
ISOLATED STORAGE
ROAD

Site Plan

A New Concept

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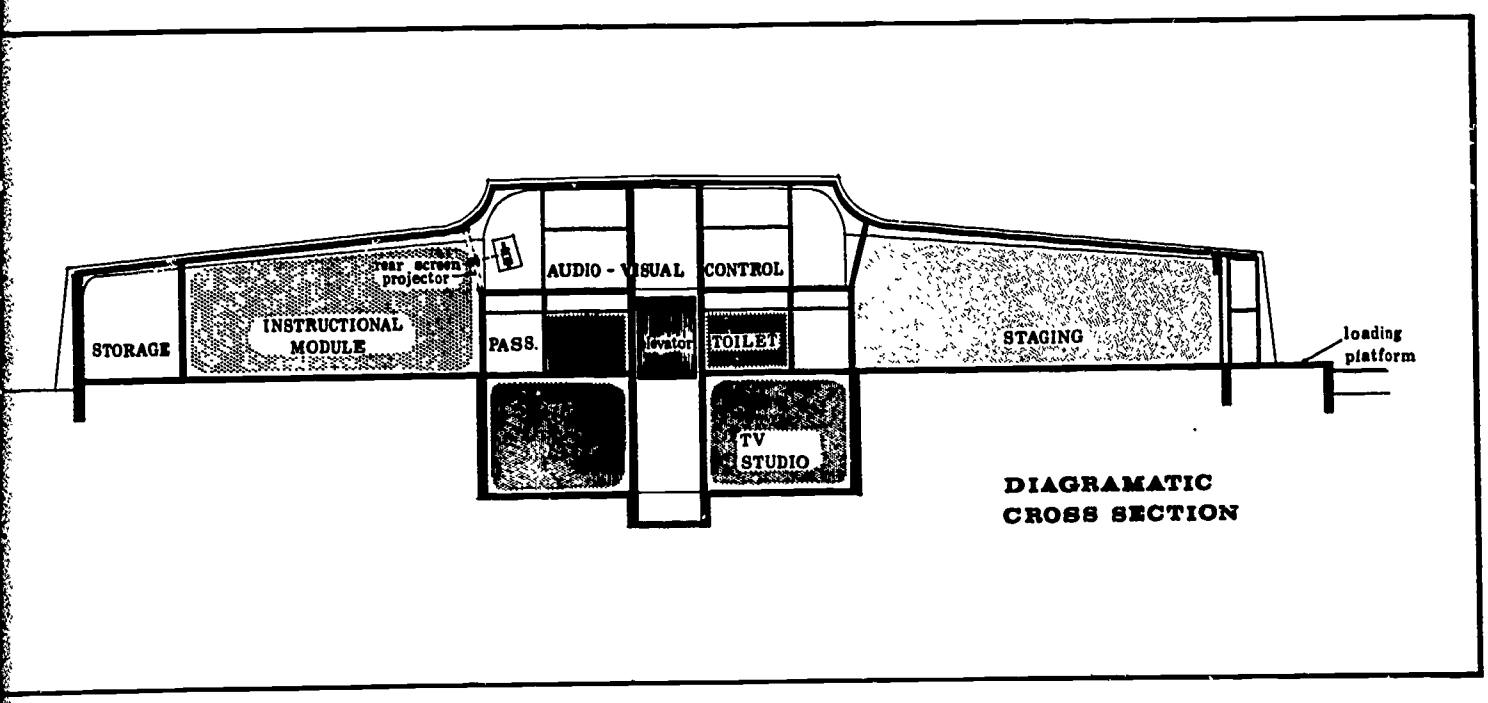


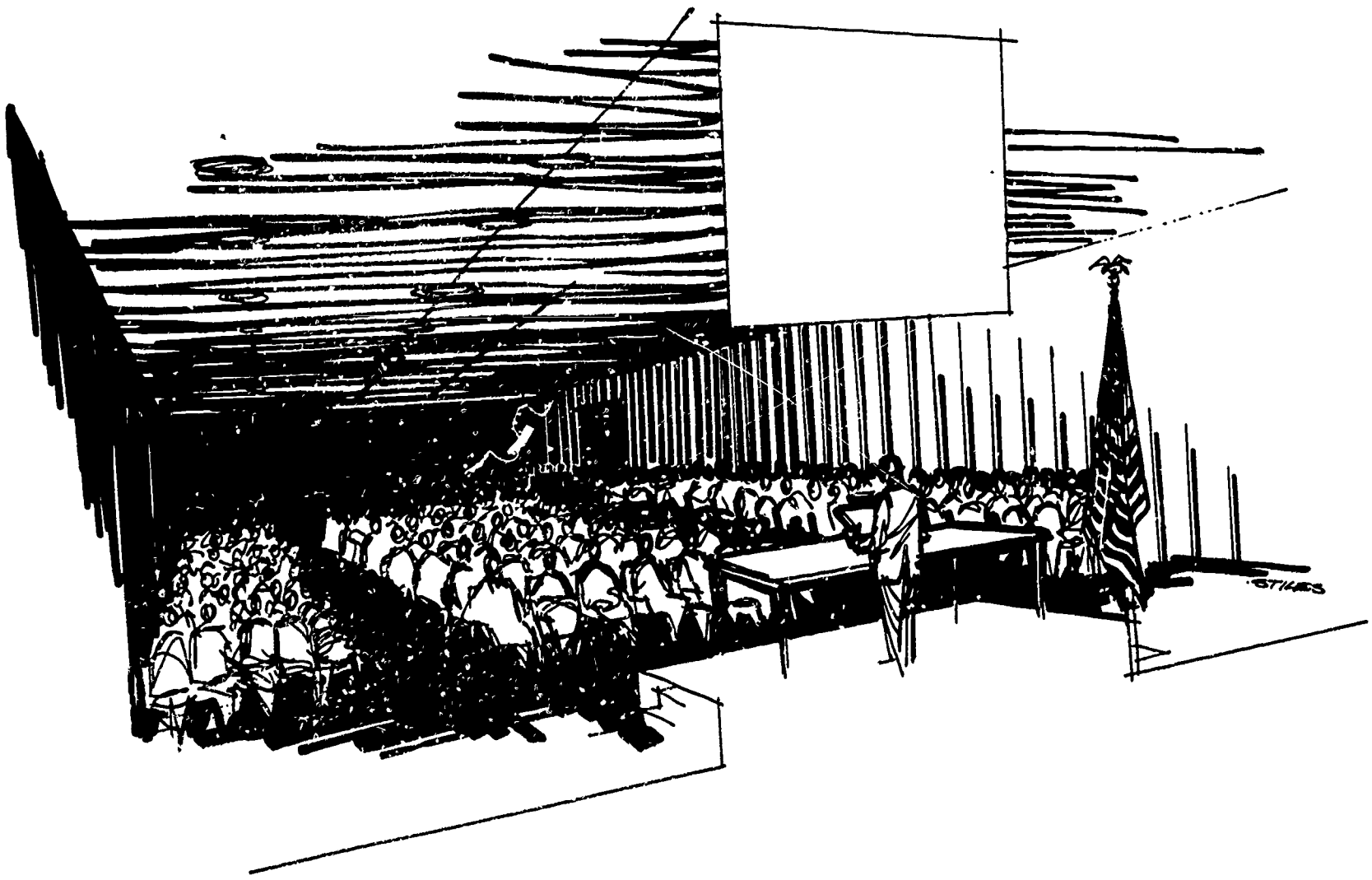
Diagramatic Cross Section

Purpose

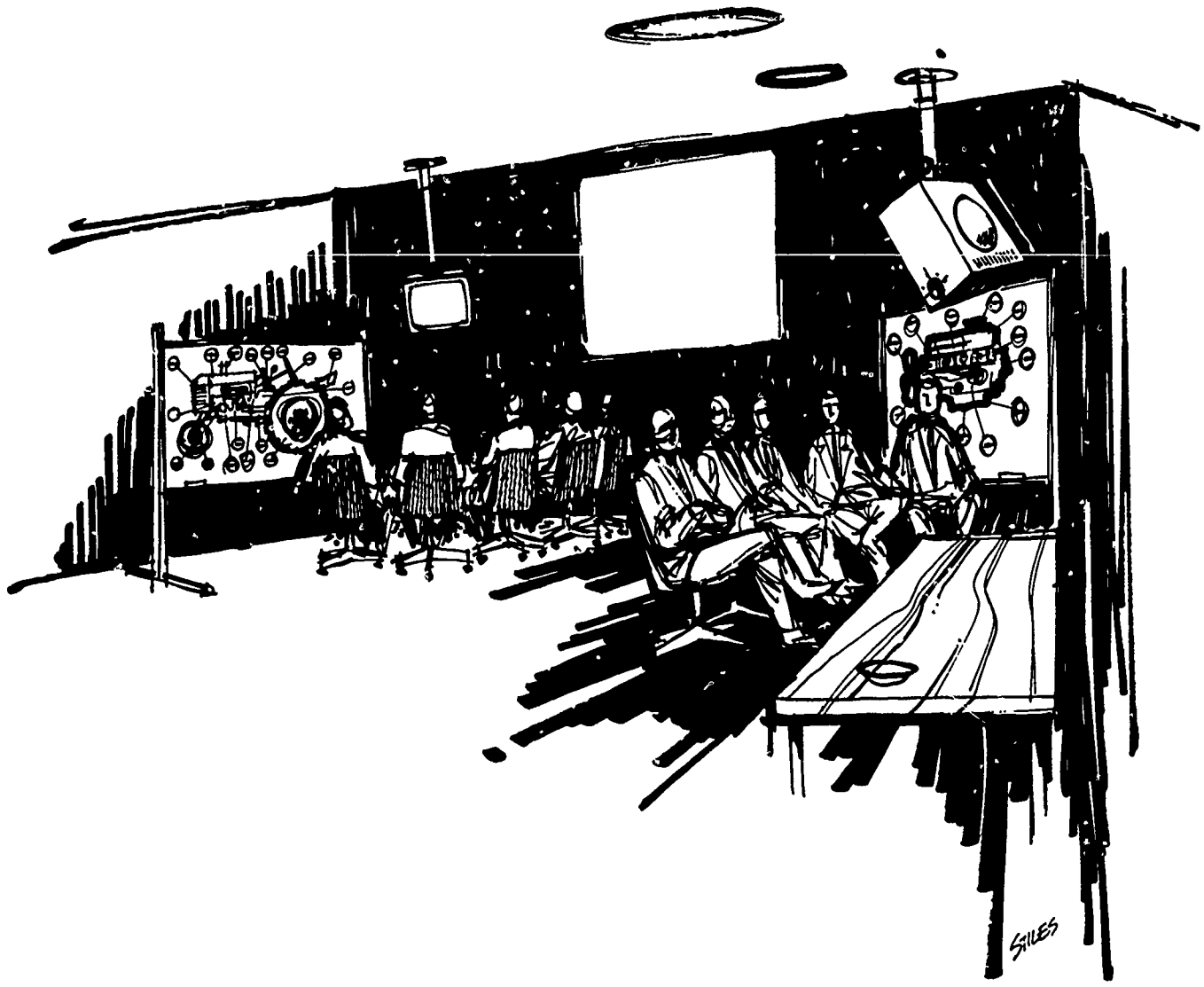
The purpose of the Technology-Resource Center is to provide a maximum of service to educators. It must represent the ultimate in educational innovations, so as to inspire and motivate, enrich the background and broaden the scope, enlarge the scientific and technical knowledge and understanding, and increase the ability to apply, in practical situations, the experiences gained.

The Technology-Resource Center is the innovation of a new and unique institution specifically designed for keeping present and future vocational-technical educators aware of new developments in technology, new "hardware", new pedagogical developments.

The Center consists of two main divisions, (1) the technology complex, and (2) the resources complex. The technology complex is devoted to updating and enriching of the vocational-technical instructional program. The resources complex is designed to supplement the teaching-learning process through curriculum research, development, evaluation and dissemination; model and innovations development; and other research oriented investigations into the improvement of teaching-learning techniques, methods, and materials.



Large Group Instructional Area



Small Group Instructional Area

Area Served

The unique characteristics of the Technology-Resource Center suggest an area or regional division of service which may be interstate as well as intrastate. Cooperation of two or more states in such an institution may not only be highly likely but extremely desirable.

Personnel Planned For

The Center is especially planned to meet the needs of in-service teachers, supervisors, guidance personnel, and administrators; it will provide enrichment for undergraduate and graduate students in teacher education; its facilities will be helpful to industrial practitioners and others in positions of leadership in business and industry.

Operational Considerations

Planning, developing and conducting programs and activities of the Center, in cooperation with other institutions of higher education will utilize and compliment other desirable and available public and private resources of equipment, technical knowledge, physical plants, and the like.

A base staff, serving on a full-time basis, needs to be provided for planning, coordinating, and providing continuous service. A supplemental call staff will need to be utilized to provide some of the aspects of technical and professional updating.

Curricula for updating educational personnel will need to reflect both horizontal articulation and vertical coordination. Horizontal articulation to express the concept of broad implications across the instructional fields; vertical coordination to indicate a level of program descriptive of "depth". Both of the above may be reflected in the same curricular activity.

Characteristics of the Physical Plant

It needs to be designed:

To meet the needs of short-time activities of such duration as 2-4 hours, 1, 2, or 3 days, 1, 2, or 3 weeks and a variety of combinations of short time spans.

To provide multi-purpose use.

For demonstration, and learning participation activities, in addition to lecture-discussions and conference-type updating activities.

To expedite moving in and out of units of the most recently developed "hardware". Convenient loading and unloading, handling, crating and uncrating, moving, and other millwright-related activities must be expedited.

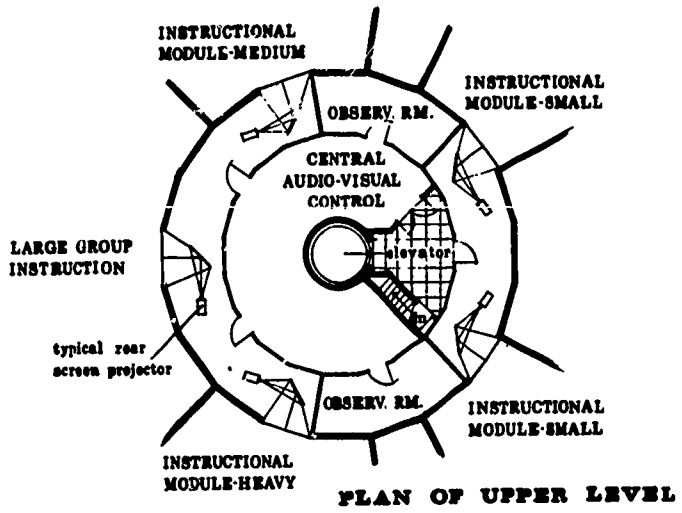
To blend the functions of the Technology Center with the functions of the Resources Center to provide maximum utilization and opportunities to serve the needs of educators.

Characteristics of the Instructional Spaces

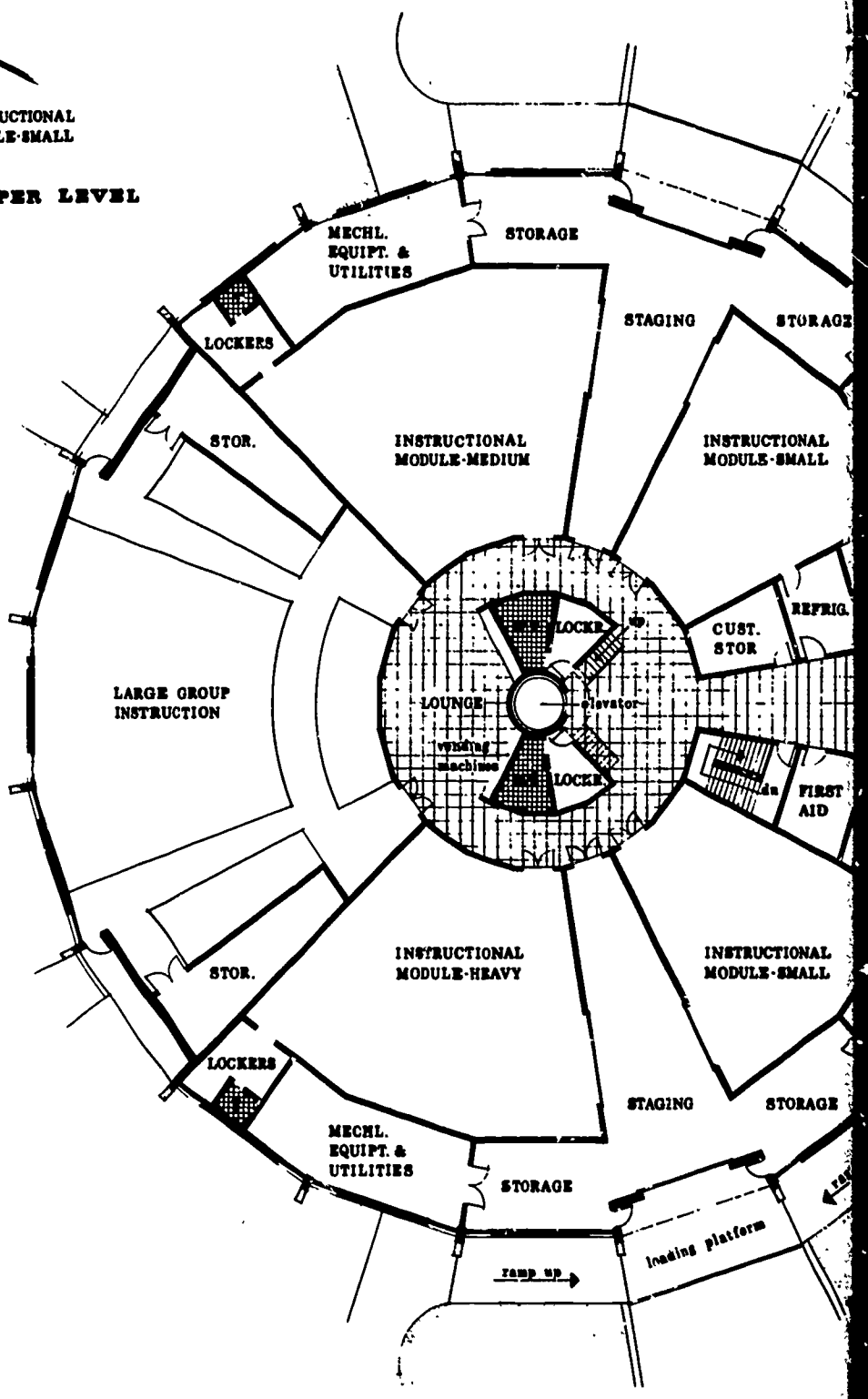
Institutes and workshops, demonstrations, and instructional methods seminars describe the broad classification of main activities of the Technology Center.

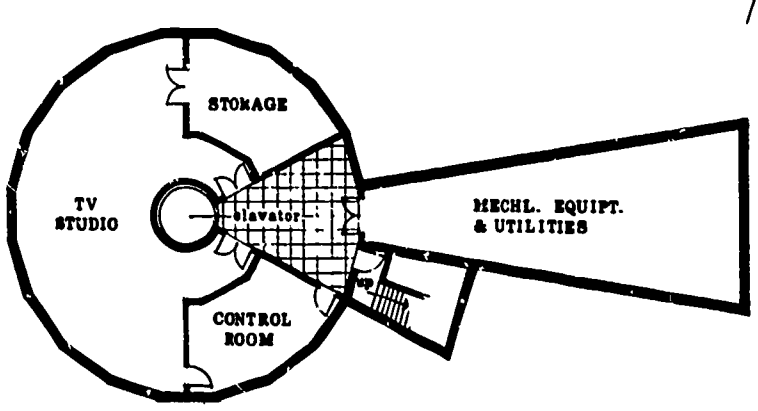
The word "module", as used in this research finding, is descriptive of a principal teaching-learning space for updating instructors and other educators relative to specific equipment, as well as applications, techniques, and processes utilizing this equipment. A module may be utilized for some or all of the functions of a laboratory, shop, or industrial demonstration, research, or production area.

The instructional suite of the Center consists of a minimum combination of modules together with the auxiliary spaces to provide required support activities. Multiples of modules may be used as desired to meet the needs identified.

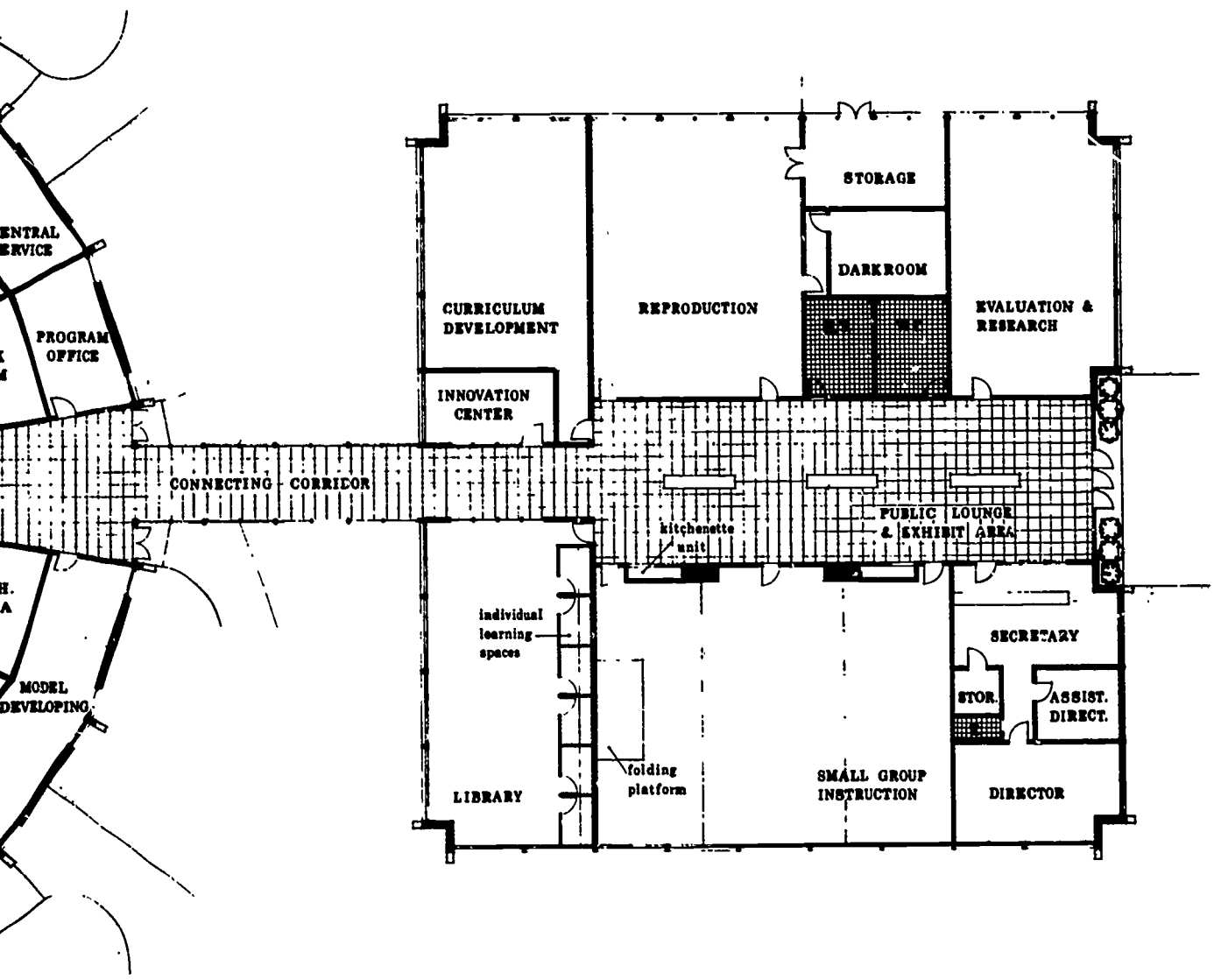


PLAN OF UPPER LEVEL





PLAN OF LOWER LEVEL



FLOOR PLAN

0 50

Technology Center Characteristics

Teaching-learning activities are focused in the four modules, the large group instructional area, and the multigroup instructional spaces. Significant planning considerations include needs such as:

Relationship of spaces (modules and ancillary)

Access to and egress from spaces

Ceiling heights, and door sizes

Sizes and arrangements of spaces

Environmental and light control

Facilities for the use of equipment such as:
- Rear screen projection
- Audio-visual equipment
- TV, etc.

Staging area for preparing equipment for use

Internal communication system

Ancillary spaces (inside)

Demonstration area
- (outside) for extremely large equipment

Resources Center Characteristics

This complex is designed to supplement and strengthen the Technology Center and to provide additional educational services to vocational-technical education such as curriculum development (research, evaluation, and dissemination), model development, and the expediting of teacher education innovations.
Spaces are provided for:

Library — technical materials, microfilm, carrels, etc.

Curriculum development — evaluation, and reproduction

Evaluation and research — for curriculum and other related activities

Model development unit

Innovations center — experimentation

Production and recording center — slides, films, etc.

Architectural Concept

The fundamental concept behind the circular plan is the creation of an enclosed space interrupted by as few columns or permanent facilities as possible. During the planning studies, and as the general concept evolved, certain principles and criteria were formulated to guide the physical planning of the center. Elsewhere in this study, concept, purposes and characteristics of the physical plan are noted.

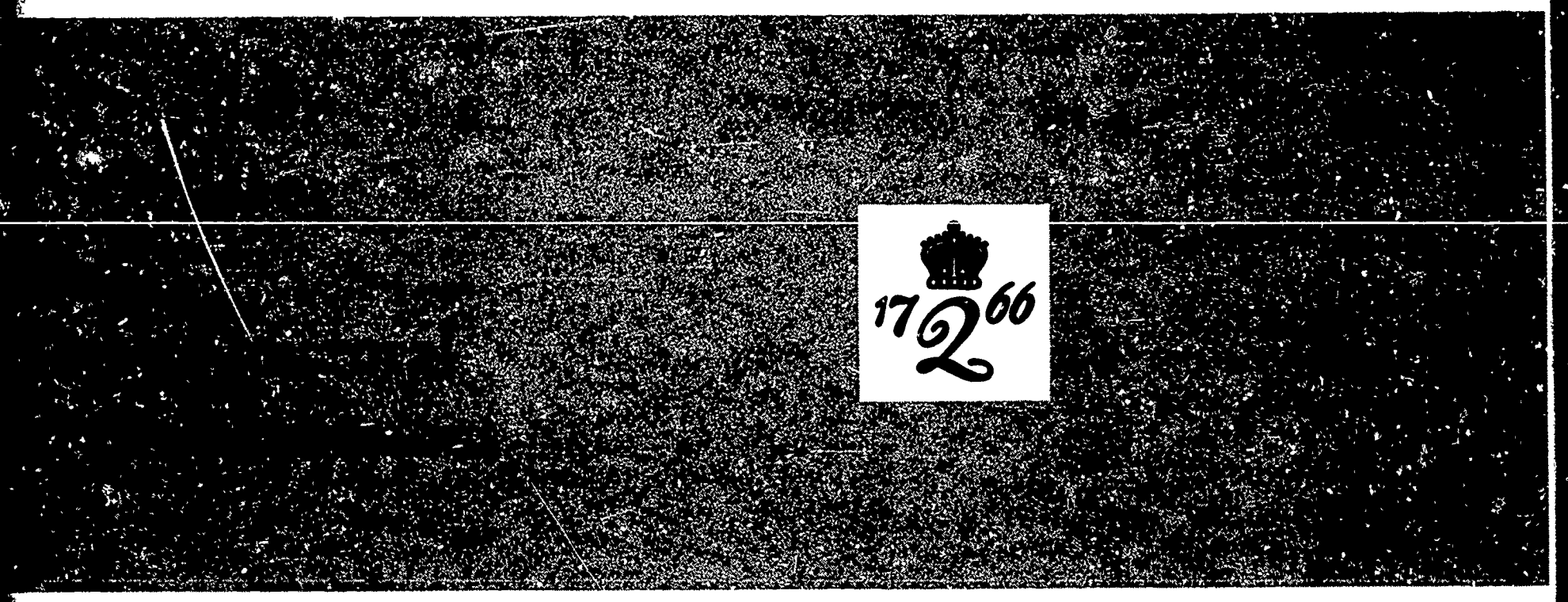
The ability of servicing the four modules led to an intriguing possibility: It is possible to cluster all auxiliary spaces around a circular core module. The center is designed on three levels; the lower level, technology complex level, and audio-visual and observation level. The lower level accommodates a television studio, central room, storage and mechanical equipment-utilities room. The technology complex level provides for the four modules, large group instructional room, mechanical equipment and utility room, storage, staging, lounge, etc. The upper level provides for a central audio-visual control area, observation rooms, rear screen and television projection windows. All levels are serviced by a central core elevator.

The four modules provide for instructional groups of varying sizes and fields of study. The modules are readily serviced by rear platform delivery docks for varying sizes of equipment, staging areas for receiving and shipping and storage areas for instructional materials. Non-instructional areas are designed to accommodate and service the four modules which are the heart of the center.

The resource complex is joined by a glass connecting corridor to the technology complex. This complex provides facilities oriented for improvement of teaching-learning techniques and administration. The small group instructional area is subdivided by two removable acoustical doors. Instructional space can be divided into three rooms or one large lecture-demonstration room with complete demonstration facilities.

Other areas, such as, evaluation and research, darkroom, reproduction, curriculum development, innovation center, and library provide space and facilities to supplement the teaching-learning process. A public lounge and exhibit area allows for business, agriculture and industry to continuously display new materials and products.

To accommodate the display and instruction of large equipment, products, and vocational agricultural requirements, an outdoor demonstration area is planned.



Structural System

Precast concrete frame and structural purlins.

Floor Construction

Concrete floor slab on grade.

Exterior Walls

Precast concrete frames and panels.

Roof Construction

Insulating deck with plastic membrane roofing.

Interior Partitions

Lightweight concrete block.

INTERIOR FINISHES

Corridors

Floor—Terrazzo
Walls—Vitreous enamel on block
Ceilings—Acoustical

Instructional Modules

Floor—Concrete or Terrazzo
Walls—Exposed block with acoustical treatment
Ceiling—Acoustical

Large Group Instruction

Floor—Carpet
Walls—Exposed block with acoustical treatment
Ceiling—Acoustical

Storage and Staging Areas

Floor—Concrete
Walls—Exposed block
Ceiling—Exposed construction

Toilets

Floor—Ceramic tile
Walls—Ceramic tile
Ceiling—Acoustical

Lounge and Exhibit Area

Floor—Carpet
Walls—Plaster and wood paneling
Ceiling—Acoustical

Library and Small Group Instruction

Floor—Carpet
Walls—Plaster and wood paneling
Ceilings—Acoustical

Typical Office Space

Floor—Carpet
Walls—Plaster and wood paneling
Ceiling—Acoustical

Fenestration

Aluminum frame with glare reducing glazing.

Lighting

Instructional modules, group instruction areas, library and resource center offices will be lighted with fluorescent fixtures. The modules will be provided with a minimum of 100 foot-candles, all other instructional areas with a minimum of 60 foot-candles.

Corridors, storage areas, lounge and miscellaneous areas will be provided with incandescent and fluorescent fixtures.

Electrical System

Main electrical service and panels in mechanical equipment room. All raceways in conduit or armored cable throughout.

Audio-visual control cables installed in conduit.

All conduit to be oversized to accommodate future needs.

Heating and Ventilating — Air Conditioning

Central forced air system with electric heating cooling exchangers.

Ventilation will be provided on the basis of three (3) air changes per hour during heating and cooling cycles and six (6) air changes per hour during interim periods. Exhaust will be through wall registers; central duct system; exhaust fan and fall louver.

Temperature control (and humidity where required) will be an electronic system on an individual room basis. Electronic air cleaners will be provided to remove dust, smoke, etc.

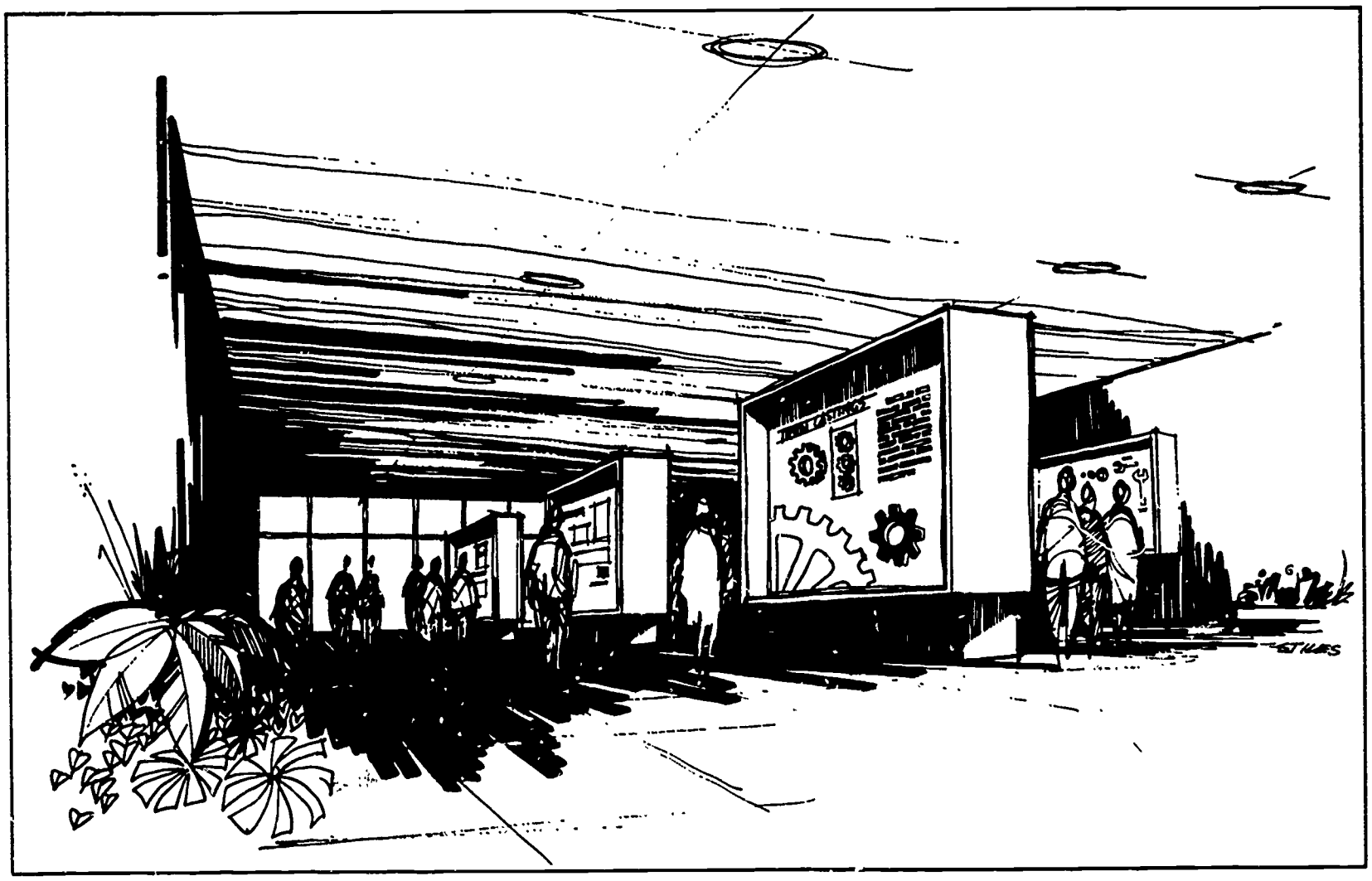
Plumbing

Plumbing system shall provide for water, waste, gas and storm drainage.

Special

Service Column—In all instructional modules and demonstration areas service columns (which provide electric, hot and cold water, air, waste, natural and special gases, liquids and audiovisual outlets) shall be provided.
Lighting—Landscaping—Well planned lighting will give the building interesting effects after dark as well as during the day. Since the facility will be used during the evening, adequate lighting in the parking areas is necessary.

Utilities—Underground services are planned with the capability of expansion considered.



Lounge and Exhibit Area

Pedagogical Hardware

The Technology-Resource Center will provide the most effective and up-to-date pedagogical hardware. It should serve as a "'showplace" for the effective utilization of such aids and a nucleus for recent innovations in teaching-learning media.

Illustrations of the types of aids considered for the modules and other teaching-learning spaces are:

White Chalkboard (Necessary for teaching wiring for data processing)
Multi-track Chalkboards, Bulletin Boards, Flannel Boards, etc.
Rear Screen Projection
Closed Circuit TV
Projection TV (for magnification in modules)
Student Response Stations in Multigroup Instructional Area
Chart Racks
Display Racks
Data Retrieval System

Site Planning

Location

Centralized location with respect to schools utilizing this service—easy accessibility from highways and turnpikes for deliveries.

Size of Site

A ten acre site would seem to be desirable to facilitate the building complex, demonstration area, parking and service roads.

Growth

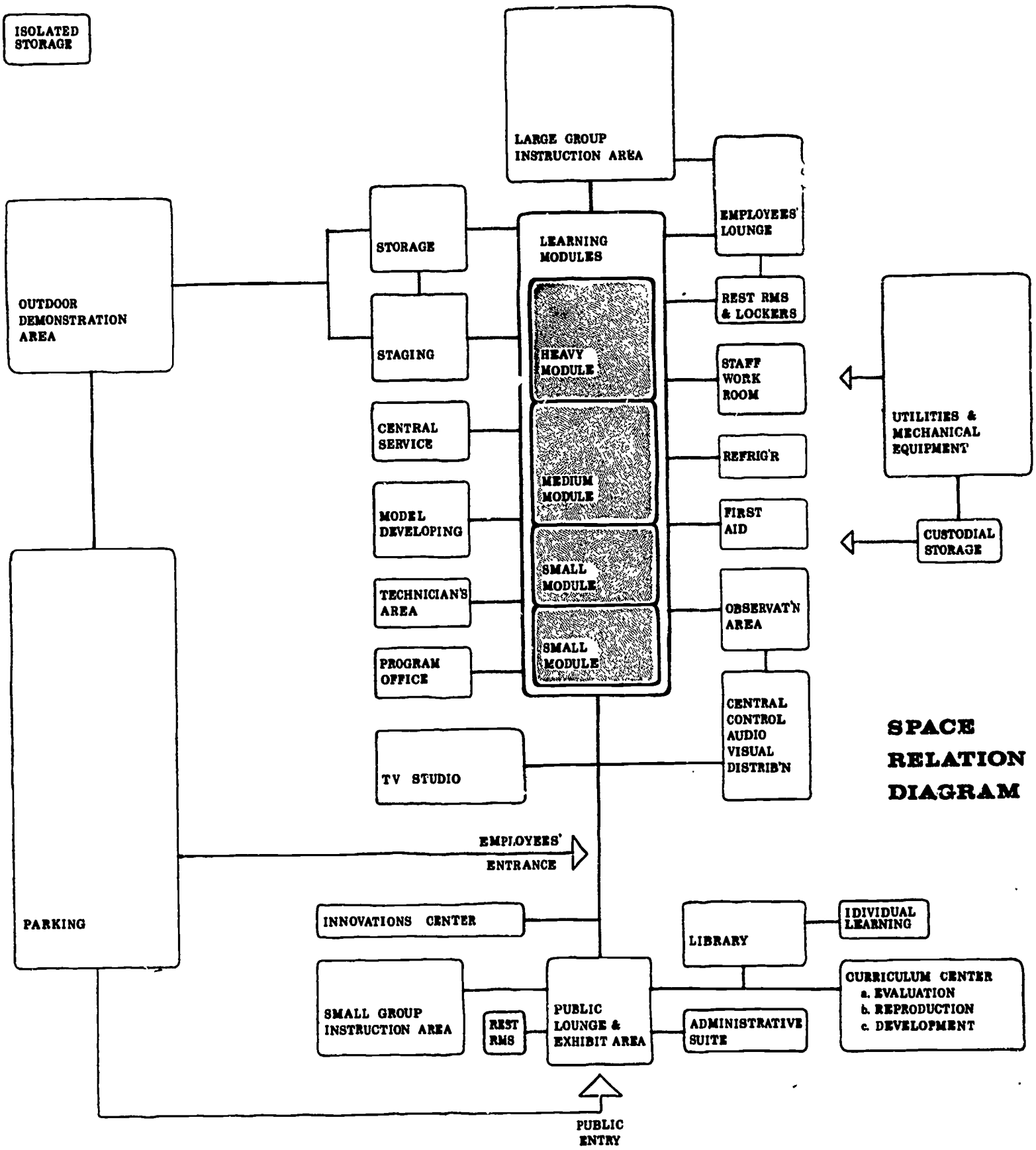
Additional module group could replace outdoor demonstration and be connected to Resources Center.

Orientation

The main consideration would be the projection of the outdoor demonstration from the prevailing winds.

Roadways, Traffic and Walks

Ease of delivery and access to building from parking areas is important. Parking is planned at the rear to eliminate "Shopping Center" appearance.



Space Relation Diagram

Panel of Consultants

The following individuals participated as members of the panel or assisted in other ways in the research project:

* RALPH E. BENDER	Ohio State University	Professor and Chairman—Agricultural Chairman
* PAULINE BURBRINK	University of Texas	Specialist—Distributive Education
* WILLIAM DUNTON	Warren City Schools, Warren, Ohio	Building Consultant Specialist
* JOSEPH CASEY	Leeds & Northrup Company	Technical Consultant
BURR D. COE	New Brunswick, New Jersey	Director—Middlesex County Vocational-Technical H. S.
THEODORE COTE	State Department of Education, New Jersey	Director—Professional Services
CHARLES DRAWBAUGH	Rutgers - The State University	Assistant Professor Vocational-Technical Education
* NICHOLAS ECKERT	New Brunswick, New Jersey	Architectural Consultant
PHILIP EDGECOMB	Rutgers - The State University	Research Specialist
NICHOLAS FRIGIOLA	State Department of Education, New Jersey	Director—Technical Education
ELAINE W. HOUSE	Rutgers - The State University	Research Associate
GERALD GRIESS	Rutgers - The State University	Lecturer in Education
ROBERT JOY	State Department of Education, New Jersey	Director—Distributive Education
* MILTON LARSON	Rutgers - The State University	Adviser—Technical Education
EMIL J. LISAK	State Department of Education, New Jersey	Director—Vocational Education in the Comprehensive H. S.
KENNETH MILLER	Rutgers - The State University	Teacher Education
JOHN O'BRIAN	Rutgers - The State University	Associate Professor—Trade and Industrial Education
* C. THOMAS OLIVO	State Department of Education, New York	Trade and Industrial Education
* MAURICE RONEY	Oklahoma State University	Director—Industrial Education
RALPH RUSH	Rutgers - The State University	Lecturer in Education Vocational-Technical Education
MERNA SAMPLES	Rutgers - The State University	Chairman, Home Economics
* CARL SCHAEFER	Rutgers - The State University	Chairman, Department of Vocational-Technical Education
BENJAMIN SHAPIRO	Rutgers - The State University	Director—Curriculum Laboratory
* ELIZABETH SIMPSON	University of Illinois	Head—Home Economics Teacher Education
* G. M. TORKELSON	University of Washington	Professor—Audio-Visual Education
BRUCE TUCKMAN	Rutgers - The State University	Associate Professor of Education
* ARTHUR WALKER	Richmond Professional Institute	Professor—Business Education
ALVIN WEITZ	State Department of Education, New Jersey	Supervisor—Business Education

* Principal Consultants for Research Project.

A Vocational-Technical Teacher Technology Center-
The Development of a Model

A research project supported by a grant under the provisions of Section (4)c of the Vocational Education Act of 1963.

Intra-University Group

DR. MILTON E. LARSON
Principal Investigator
Department of Vocational-Technical Education
Graduate School of Education
Rutgers - The State University

DR. JOHN J. O'NEILL
Dean, Graduate School of Education
Rutgers - The State University

DR. ROBERT M. WORTHINGTON
Assistant Commissioner in Charge of Vocational Education
State of New Jersey

DR. ERNEST E. McMAHON
Dean
Continuing Education
Rutgers - The State University

DR. CARL J. SCHAEFER
Chairman
Department of Vocational-Technical Education
Rutgers - The State University

Architectural Consultants

ECKERT AND GATARZ, ARCHITECTS
79 Paterson Street
New Brunswick, New Jersey

If additional information is desired contact:

Dr. Milton E. Larson, Principal Investigator
Department of Vocational-Technical Education
Graduate School of Education
Rutgers - The State University
10 Seminary Place
New Brunswick, New Jersey